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Mazdoor Kisan Shakti Sangathan

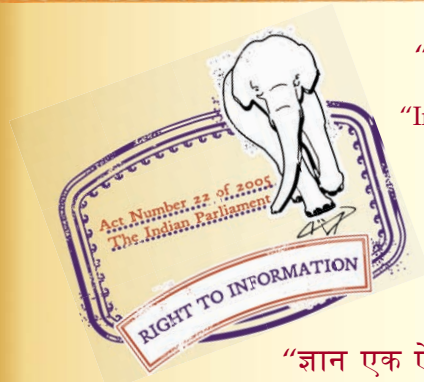
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“पुराने को छोड़ नये के तरफ”

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“Step Out From the Old to the New”

IS 550-2 (2005): Safes, Part 2: Tests for Burglary Resistance [MED 24: Security Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
तिजोरियाँ

भाग 2 चोरी से प्रतिरोध सम्बन्धी परीक्षण
(चौथा पुनरीक्षण)

Indian Standard
SAFES

PART 2 TESTS FOR BURGLARY RESISTANCE
(*Fourth Revision*)

ICS 13.310

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (Part 2) (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Security Equipment Sectional Committee had been approved by the Mechanical Engineering Division Council.

Requirements for safes were earlier laid down in IS 550 : 1979 'Safes (*second revision*)'. IS 10486 : 1983 covered the performance requirements for a particular type of safes, namely, Class A safes. However, with technological advancements and experience of the industry, the standard on safes was revised and brought out in three parts to cover performance requirements, test for burglary resistance and test for fire resistance respectively. Accordingly IS 10486 : 1983 was withdrawn.

With further experience in implementation of the standard and the fact that risk of attack with explosives has increased, the standard has been revised again.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

SAFES

PART 2 TESTS FOR BURGLARY RESISTANCE

(Fourth Revision)

1 SCOPE

This standard (Part 2) lays down the methods of test for assessing the burglary resistance capacity of the safes.

2 REFERENCES

The following standard contains provisions, which through reference in this text constitute provisions of this standard. At the time of publication, the edition indicated was valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

IS No.	Title
550 (Part 1) : 2003	Safes: Part 1 Specification (fourth revision)

3 TERMINOLOGY

For the purpose of this standard the following definitions shall apply.

3.1 39 cm² Opening — This type of opening is defined as:

- a) A rectangular shaped opening 39 cm² in area with the smaller dimension 4.0 cm or greater,
- b) A circular opening 7.0 cm in diameter, or
- c) A triangular opening with at least a 5.0 cm dimension from the base to the peak.

3.2 13 cm² Opening — A rectangular shaped opening 13 cm² in area with the smaller dimension 2.5 cm or greater or a circular opening 4.0 cm in diameter.

3.3 Common Hand Tools — Include chisels, punches, wrenches, screw drivers, pliers, hammers and sledges not exceeding 3.5 kg size and pry bars and ripping tools not exceeding 1.7 m in length.

3.4 Picking Tools — Include common or standard patterns that are not designed for use against a special make of safe.

3.5 Impact Tools — Include portable electric impact hammer 2.5 cm size and hammer drills not exceeding 2.5 cm diameter.

3.6 Pressure Applying Devices — Include portable

drill presses, portable drilling jigs, or other types of drill holding mechanisms.

3.7 Portable Electric Drill — Electric hand drills including carbide tipped drills not exceeding 2.5 cm diameter.

3.8 Power Saw — Include circular saws not exceeding 20 cm diameter, hole saws not exceeding 3.0 cm diameter and reciprocating saws with maximum blade length of 20 cm.

3.9 Grinding Point — Include various shaped grinding points (cone, cylinder, disk and the like) driven by electric grinder.

3.10 Abrasive Cutting Wheel — Metal or stone cutting abrasive wheel, maximum 20 cm diameter and maximum 3.2 mm thick.

3.11 Cutting Torch — Oxygen-acetylene fuelled cutting torch, 180° (straight) or 90°. A nozzle 2.8 mm diameter capable of cutting 25 cm thick solid mild steel block.

3.12 Deposit Bag — A bag constructed of canvas, reinforced plastic, or the like, that is provided with a closing mechanism, such as zipper.

3.13 Deposit Envelope — 241 mm × 114 mm or larger size business envelope.

3.14 Fishing — Introducing through the deposit mechanism, fishing tools that may be manipulated so as to grasp the deposit envelope, or bag, and then withdraw it.

3.15 Trapping — The use of trapping tools that may be introduced into the deposit mechanism in such a manner as to avoid detection by a depositor, in order to prevent the deposit from reaching the safe, the deposit can then be withdrawn after the depositor has left.

3.16 Fishing and Trapping Tools — Cardboard, plastic sheet, fish hooks, flexible spring shaft pick up fingers, lines, shim stock and the like.

4 NET WORKING TIME

4.1 As the object of the investigation is to arrive at conclusions as to the resistance of a safe to expert attack, the testing team, consisting of two skilled

operators at a time with the specified tools and protective safety clothing, may select a number of attacks within the scope of the test procedure and attempt each attack or combination of attacks for the full allotted time [see Table 1 of IS 550 (Part 1)].

4.2 The net working time in minutes is to be understood to cover only the period during which an attack is actively in progress on the safe and is to be exclusive of preparation time for test and time required for safety precautions. The attack shall be in one continuous operation.

5 SAMPLE FOR TESTING

A single sample, known to be fully representative of a lot of safes of similar design and construction, shall be subjected to test. Such sample shall be selected on the basis of random sampling.

6 TESTS

6.1 Tests for verifying burglary resistance of safes consist of attacking the safe with the help of tools, oxyacetylene torch, explosive or a combination there-of.

6.2 Testing Team

A testing team shall consist of two skilled operators under the supervision of a test team leader. The testing team shall be familiar with the design and construction of the safe being tested.

6.3 Test Equipment

6.3.1 Common hand tools, picking tools, pressure applying devices, portable electric drills (see 3.3 to 3.9 excluding 3.5), fishing and trapping tools (see 3.16) may be used for checking tool resistance capacity of class D safe.

6.3.2 Common hand tools, picking tools, impact tools, (attacking with impact tools is applicable to classes BB, BBB, A, AA, AAA and X safes only), pressure applying devices, portable electric tools and power saws (see 3.3 to 3.10) may be used for checking tool resistance capacity of safes.

6.3.3 Oxyacetylene torch shall be used to check the torch resistance capacity of the safes where applicable.

6.3.4 For combined attack, any tool specified in 6.3.2 in conjunction with oxyacetylene torch shall be used (see 3.3 to 3.11).

6.3.5 Nitroglycerine (maximum 227 g) or other high explosive providing the equivalent explosive energy with any equipment specified in 6.3.4.

6.4 Test Methods

Any or all of the methods of attacks specified below may be employed at the option of the testing team.

6.4.1 Drilling Lock Mechanism

An attempt shall be made to drill through the door to the lock box, lugs carrying bar or other parts of the mechanism, then release the bolt work by punching, prying or picking.

6.4.2 Handle Forcing

An attempt shall be made to force the bolt operating lever by means of a wrench or pipe applied to rotate the bolt work and punching the bolt handle so as to free the lock connection.

6.4.3 Door Sledging and Wedging

An attempt shall be made to destroy or pierce the door by means of wedges, chisels and sledge hammers so as to give access to the contents of safe.

6.4.4 Creating of an Opening

A tool attack shall consist of an attempt to cut an opening as specified in 6.4.4.1 to 6.4.4.3 by drilling a series of holes in close proximity and then breaking out the section of metal with a sledge hammer.

6.4.4.1 Class D safes shall be able to resist making a 39 cm² opening (see 3.1) through door or front face.

6.4.4.2 Class C, CC and CCC safes shall be able to resist making a 39 cm² opening (see 3.1) entirely through the door or any face.

6.4.4.3 Class B safes shall be able to resist making a 13 cm² opening (see 3.2) entirely through the door or a 39 cm² opening (see 3.1) through any face other than door.

6.4.4.4 Class BB, BBB, A, AA and AAA safes shall be able to resist making a 13 cm² opening (see 3.2) entirely through any face by tool or by combination of torch and tools.

6.4.5 Combination Lock (Wherever Provided) Drifting and Drilling

An attempt shall be made to knock off the combination dial, punch or drill the spindle and then release the lock mechanism by means of picking tools.

6.4.6 Fishing and Trapping (Class D Safes)

6.4.6.1 For the envelope fishing attempt, the deposit safe is to be loaded with 12 sealed business envelopes of size 241 mm × 114 mm, that are filled with flat sheets of paper so that each sealed envelope is 6 to 13 mm thick.

6.4.6.2 For the deposit bag fishing attempt, the deposit safe is to be loaded with six canvas deposit bags that are filled with paper so that each sealed bag is 35 to 65 mm thick. The bags are to be standard deposit bags measuring 15 to 23 cm wide × 20 to 30 cm long

or specially designed for the deposit safe being tested.

6.4.7 Oxyacetylene Gas Cutting or Welding Torch
(For Class B, BB, BBB, A, AA, AAA and X Safes Only)

Oxyacetylene gas cutting torch attack shall be carried out on the selected sample with an aim to open the door or make an opening entirely through the door/body as specified below for different classes of safes. This shall be combined with the impact hammer attack.

- a) For Class B safes — 13 cm² opening (see 3.2) entirely through the door.
- b) For Class BB, BBB, A, AA, AAA and X safes — 13 cm² opening (see 3.2) entirely through the door or body of the safe by combination of torch and tools.

6.4.8 Explosive Attack

Class X safes shall resist making a 13 cm² opening (see 3.2) entirely through any face by tool or by

combination of torch and tools and explosives as specified in 6.3.5.

Not more than 114 g of nitroglycerine or the amount of explosive providing the equivalent explosive energy is to be used in a single charge.

Though the total quantity of explosive used in a succession of charges on one test sample has been fixed at 227 g, preliminary explosive tests may be made on a sample of material representing the door or body construction, or a second sample may be required, depending upon the number of points of attack requiring actual test for the complete determination of resistance to entry.

7 CRITERIA FOR ACCEPTANCE

The safes shall be considered to be conforming to the criteria for acceptance of this standard, if they successfully withstand the test for minimum net working time as specified in Table 1.

Table 1 Criteria for Acceptance

(Clause 7)

SI No.	Class	Classification	Testing on		Criteria			
			Door	Body	Test Method	Test Tools	Opening (cm ²)	Net Working Time in Minutes
					Clause reference			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	D	Deposit Safe (DEP-15D)	Yes	No	6.4.1 to 6.4.6	6.3.1	39	15
ii)	C	TL 30D × TL 10 × 5 - FR 30	Yes No	No Yes	6.4.1 to 6.4.5	6.3.2		30 10
iii)	CC	TL 15 × 6 - FR 30	Yes	Yes				15
iv)	CCC	TL 30 × 6 - FR 30						30
v)	B	TRTL - 15 (D) × TL 15 × 5	Yes No	No Yes	6.4.1 to 6.4.7 excluding 6.4.6	6.3.4 6.3.2	13 39	15 15
vi)	BB	TRTL - 15 × 6	Yes	Yes		6.3.4	13	15
vii)	BBB	TRTL - 30 (D) × TRTL 15 × 5	Yes No	No Yes				30 15
viii)	A	TRTL - 30 × 6	Yes	Yes				30
ix)	AA	TRTL - 60 × 6						60
x)	AAA	TRTL - 90 × 6						90
xi)	X	TXTL - 60 × 6			6.4.1 to 6.4.8	6.3.5	60	

NOTES

1 According to classification of the safes, attack test is carried out only on door or on all six sides (door and body both) of the safes. Class D to class CCC safes have only tool attack, class B have torch and tool attack on door along with tool attack on remaining sides of body. Classes BB to AAA safes are tested for torch as well as tools combined attack. Class X safes are tested for torch, tools and explosives attack.

2 For those classifications that allow the use of a cutting torch, the quantity of gas consumed in any one test shall be limited to 28 m³ combined oxygen and acetylene gas.

ANNEX A*(Foreword)***COMMITTEE COMPOSITION****Security Equipment Sectional Committee, ME 24**

<i>Organization</i>	<i>Representative(s)</i>
Reserve Bank of India, Mumbai	SHRI B. K. KATYAL (<i>Chairman</i>) SHRI K. RAGHUNATHAN (<i>Alternate</i>)
Bank of India, Mumbai	SHRI S. HARIHARAN
Bharat Diamond Bourse, Mumbai	SHRI MEHUL N. SHAH
Center for Environment and Explosive Safety (DRDO), New Delhi	SHRI A. K. KAPOOR SHRI V. K. CHAUDHARY (<i>Alternate</i>)
Central Bank of India, Mumbai	LT- COL M. L. KANAUIA CAPT S. KANNAN (<i>Alternate</i>)
Central Building Research Institute, Roorkee	DR T. P. SHARMA SHRI SUVIR SINGH (<i>Alternate</i>)
Chandan Metal Products Pvt Ltd, Vadodara	SHRI NITIN P. PATNI SHRI G. D. VERMA (<i>Alternate</i>)
General Insurance Corporation of India, Tariff Advisory Committee, Mumbai	SHRI S. K. CHOWDHARY
Godrej and Boyce Mfg Co Ltd, Mumbai	SHRI D. E. BYRAMJEE SHRI AJIT NIRVANE (<i>Alternate</i>)
Loss Prevention Association of India Ltd, New Delhi	SHRI D. K. SARKAR SHRI T. P. RAO (<i>Alternate</i>)
Methodex Systems Ltd, New Delhi	SHRI A. K. VERMA SHRI SUNIL WALI (<i>Alternate</i>)
Punjab National Bank, New Delhi	CAPT S. P. SINGH SHRI K. L. JAGGA (<i>Alternate</i>)
Standard Chartered Bank, Mumbai	LT- CDR KISHAN GOPAL
State Bank of India, Mumbai	SHRI G. V. CHANANA SHRI S. D. SUMANI (<i>Alternate</i>)
Steelage Industries Ltd, Mumbai	SHRI R. RAGHUPATI SHRI N. S. JOSHI (<i>Alternate</i>)
Tata Consultancy Services, Mumbai	SHRI SANJAY BAHL SHRI R. K. RAGHAVAN (<i>Alternate</i>)
The Gem and Jewellery Export Promotion Council, Kolkata	SHRI PANKAJ KUMAR PAREK
Union Bank of India, Mumbai	BRIG S. SREERAMULU CAPT E. RAJARAM (<i>Alternate</i>)
BIS Directorate General	SHRI A. S. BASU, Scientist 'F' & Head (MED) [Representing Director General (<i>Ex-officio</i>)]
<i>Member Secretary</i>	
SHRI P. VENKATESWARA RAO Scientist 'E' (MED), BIS	

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